

Amendments to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the present application:

1-3 (cancelled)

4. (currently amended) An infrared imaging device according to claim 36 1, wherein said camera further comprises:

a first objective lens between said beam splitter and said first sensor, said first objective lens capable of allowing radiation in at least a portion of said first spectral range to pass therethrough; and,

a second objective lens between said beam splitter and said second sensor, said second objective lens capable of allowing radiation in at least a portion of said second spectral range to pass therethrough.

5. (currently amended) An infrared imaging device according to claim 36 1, wherein said camera further comprises:

a common reflective objective lens comprising a first concave mirror arranged to reflect radiation entering said aperture; and,

a reflective surface arranged to redirect said radiation reflected off said common reflective objective lens toward said beam splitter.

6. (currently amended) An infrared imaging device according to claim 36 1, wherein:

said first output comprises a first optical image;

said second output comprises a second optical image;

said camera further comprises a beam combiner arranged to optically combine said first and second outputs into a third output; and,

said infrared imaging device further comprises an optical viewer arranged to provide said first output, said second output, or said third output.

7-8 (canceled)

9. (currently amended) An infrared imaging device according to claim 6, wherein said infrared imaging device is ~~mountable~~ mounted to a headgear such that said optical viewer aligns with the eye of an operator.

10. (original) An infrared imaging device according to claim 9, wherein said optical viewer is repositionable away from the eye of said operator.

11-13. (canceled)

14. (currently amended) An infrared imaging device according to claim 36 4, further comprising an interconnect assembly, said interconnect assembly comprising:

a first connector arranged to releasably secure said infrared imaging device to a headgear such that the bottom of said display device is just above the eyes of an operator when said headgear is worn;

a second connector arranged to releasably secure a power assembly to said headgear; said power assembly arranged to serve as a balancing weight; and,

at least one interconnecting cable coupling said power assembly to said sensor assembly.

15. (currently amended) An infrared imaging device according to claim 36 4, wherein said display device comprises a viewing device ~~mountable~~ mounted to a headgear such that, when said headgear is worn by an operator, said viewing device is positioned just above the eyes of an operator, and said viewing device may be viewed by said operator by looking upwards towards said viewing device.

16. (currently amended) An infrared imaging device according to claim 36 4, wherein said display device is capable of selectively displaying said first output, said second

output, or a fused image from said first and second outputs, wherein said fused image comprises at least a portion of said first output with at least a portion of said second output.

17-26. (canceled)

27. (currently amended) An infrared imaging device according to claim 36 1, further comprising a ~~transmitter~~ transceiver arranged to transmit and receive image signals to and from the output of said camera to a remote location.

28. (currently amended) An infrared imaging device according to claim 36 1, further comprising a laser illuminator mounted to said camera for NIR illumination.

29. (currently amended) An infrared imaging device according to claim 36 1, further comprising:

a waterproof and fireproof envelope sealing said camera and said display device;
and,

at least one foam cut inserted between said envelope and said camera, said at least one foam cut arranged to protect said infrared imaging device against vibration, impact, and hot/cold weather.

30. (currently amended) An infrared imaging device according to claim 36 1, further comprising a voice activated switch arranged to selectively control said infrared imaging device.

31. (currently amended) An infrared imaging device according to claim 36 1, further comprising processing circuitry arranged to implement image processing and automatic target recognition.

32. (currently amended) An infrared imaging device according to claim 36 4, further comprising a switch arranged to alternatively display said first and second outputs.

33. (currently amended) An infrared imaging device according to claim 36 4, wherein said first and second sensors each comprise identical optics and said first and second outputs are arranged such that when a user opens the left eye while holding the right eye closed, the first output may be seen, when said user opens the right eye while holding the left eye closed, the second output may be seen, and when both the left and right eyes are open, said ~~use~~ user may see both said first and second outputs overlapped.

34-35 (cancelled)

36. (new) An infrared and visible image fusion device comprising a display device and a camera, said camera comprising:

an aperture arranged to allow radiation to enter said camera;

a first sensor having a first output, said first output representing an image of said radiation passing through said aperture filtered into a first spectral range, wherein at least a portion of said first spectral range includes visible light;

a second sensor having a second output, said second output representing an image of said radiation passing through said aperture filtered into a second spectral range, wherein at least a portion of said second spectral range includes infrared radiation;

a beam splitter arranged to receive radiation passed through said aperture, said beam splitter having a first waveband filter arranged to pass radiation in at least a portion of said first spectral range to said first sensor, and a second waveband filter arranged to pass radiation in at least a portion of said second spectral range to said second sensor; and

electronic image fusion circuitry configured to process said first output representing said first spectral range and said second output representing said second spectral range by converting respective visible and infrared images represented by said first and second outputs to a consistent pixel and size format such that pixel-by-pixel data fusion is realized at said display device.

37. (new) An infrared and visible image fusion device as claimed in claim 36 wherein said electronic image fusion circuitry is configured such that said pixel-by-pixel data fusion comprises pixel-by-pixel addition.

38. (new) An infrared and visible image fusion device as claimed in claim 36 wherein said electronic image fusion circuitry is configured such that said pixel-by-pixel data fusion comprises pixel-by-pixel subtraction.

39. (new) An infrared and visible image fusion device as claimed in claim 36 wherein said electronic image fusion circuitry is configured such that said pixel-by-pixel data fusion comprises pixel-by-pixel convolution.

40. (new) An infrared and visible image fusion device as claimed in claim 36 wherein said electronic image fusion circuitry is configured such that said pixel-by-pixel data fusion comprises pixel-by-pixel image enhancement.

41. (new) An infrared and visible image fusion device comprising a display device and a camera, said camera comprising:

an aperture arranged to allow radiation to enter said camera;

a first sensor having a first output, said first output representing an image of said radiation passing through said aperture filtered into a first spectral range, wherein at least a portion of said first spectral range includes visible light;

a second sensor having a second output, said second output representing an image of said radiation passing through said aperture filtered into a second spectral range, wherein at least a portion of said second spectral range includes infrared radiation;

a beam splitter arranged to receive radiation passed through said aperture, said beam splitter having a first waveband filter arranged to pass radiation in at least a portion of said first spectral range to said first sensor, and a second waveband filter arranged to pass radiation in at least a portion of said second spectral range to said second sensor; and

an objective lens common to said first and second sensors between said aperture and said beam splitter, wherein said common objective lens is arranged to allow radiation in at least a portion of said first spectral range and at least a portion of said second spectral range to pass there through and comprises a composite lens free of crystal germanium and comprising elements ZnSe - $\text{Ge}_{33}\text{As}_{12}\text{Se}_{55}$ - ZnSe.

Amendments to the Drawings

The attached sheets of drawings include changes to Figs. 2 and 5. These sheets replace the original sheets including Figs. 2 and 5. In Fig. 2, the juxtaposition of reference numbers 126 and 128 has been corrected. Fig. 5A has been renumbered as Fig. 5. Reference number 124D has been added to Fig. 5.

Attachment: Replacement Sheets